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EXAMINER
PATEL, KINARI M

ART UNIT	PAPER NUMBER
2654	10

DATE MAILED: 09/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/588,629	JIMENEZ FELSTROM ET AL.	
	Examiner	Art Unit	
	Kinari Patel	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10-21* is/are pending in the application.

4a) Of the above claim(s) *1-9* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 June 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☒ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *7,9* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority based on an application filed in Sweden on June 7, 1999. It is noted, however, that applicant has not filed a certified copy of the 9902103-2 application as required by 35 U.S.C. 119(b).

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 10, 11, 13, and 15 are rejected under 35 U.S.C. 102(b) as being unpatentable by Bridle et al. (GB 2137791 A).

As per claim 10, Bridle et al. disclose a spectral distance calculator (Page 1, Ln. 4-5), comprising:

a calculator for performing spectral distance calculation comparing an input spectrum (Page 1, Ln. 7), from an input signal in the presence of a first known noise signal (Page 1, Ln. 7), and a reference spectrum (Page 1, Ln. 10-12);

a memory means for pre-storing one or more noise spectrums of one or more known noise signals including the first known noise signal (Page 1, Ln. 51, Figure 3: the template noise spectrum estimate is inherently stored in memory),

masking circuitry for masking the spectral distance between the input spectrum (Page 1, Col. 1, Ln. 48-49) and the reference spectrum (Page 1, Col. 1, Ln. 50-51) using the pre-stored noise spectrum of the first known noise signal.

As per claim 11, Bridle et al. disclose a spectral distance calculator according to claim 10, wherein the calculator is configured to assigning the spectral distance between the input spectrum and the reference spectrum a zero value for each frequency of the input speech spectra which is due to noise (Page 2, Ln. 63-64).

As per claim 13, Bridle et al. disclose a spectral distance calculator according to claim 10, wherein the spectral distance calculation includes calculating to the following expression for spectral distance D_n:

$D_n = \sum A_i |R_n(f_i)-S_n(f_i)|$,

where $R_n(f_i)$ is the reference spectrum, $S_n(f_i)$ is the input signal spectrum, and A_i is equal to zero if a frequency f_i of the input signal is due to any known noise and A_i is unity if no noise is present at the frequency f_i (Page 3, Ln 10-11: The complete spectral distance is the sum of the spectral distance calculations for the number of samples discerning the reference spectra from each other.)

As per claim 15, a speech recognition system according to claim 14, wherein the spectral distance is the sum of the spectral distance calculations for a number of samples discerning the reference spectra from each other (Page 3, Ln 10-11).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bridle et al. (GB 2137791 A) in view of Sedgwick et al. (EP 0240329 A2).

As per claim 12, Bridle et al. disclose a spectral distance calculator according to claim 10. However, Bridle et al. fails to teach a spectral distance calculator according to claim 10 wherein the noise has a lower level than the input spectrum.

Calculating spectral distances wherein the noise has a lower level than the input spectrum is well known in the art as evidenced by Sedgwick et al. Sedgwick et al. disclose signal levels representative of example sounds in regions where the signal is above a noise level (Page 5, Ln. 46-47). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the spectral distance calculator of Bridle et al. with wherein said noise has a lower level than the input spectrum, as taught by Sedgwick et al., because one of ordinary skill in the art would readily know that using a noise level lower than the input

spectrum would allow the recognition of speech in levels of noise that a present in real situations, for example, in situations where background noise is present.

6. Claims 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridle et al. (GB 2137791 A) in view of Nakadai et al. (US Patent No. 5,732,394).

As per claim 14, Bridle et al. disclose a spectral distance calculator according to claim 1. However, Bridle et al. fail to teach a speech recognition system for comparing an input spectrum and a reference spectrum using a spectral distance calculator according to claim 10 comprising a selector for selecting a reference spectrum minimizing a spectral distance between the input spectrum and the reference spectrum.

A speech recognition system for comparing an input spectrum and a reference spectrum using a spectral distance calculator comprising a selector for selecting a reference spectrum minimizing a spectral distance between the input spectrum and the reference spectrum is well known in the art as evidenced by Nakadai et al. Nakadia et al. disclose a word recognition method that performs pattern matching between unknown speech pattern and multiple reference templates, and detects a reference template that provides the smallest distance measures detected between the unknown speech pattern and the reference templates (Abstract; column 1, lines 63-67; column 2, lines 1-9). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the spectral distance calculator of Bridle et al. to further comprise a speech recognition system for comparing an input spectrum and a reference spectrum using the spectral distance calculator further comprising a selector for selecting a

reference spectrum minimizing a spectral distance between the input spectrum and the reference spectrum because one of ordinary skill in the art would readily know that matching the input signal spectrum against similarly formed reference signals among a set of stored reference signals would minimize the amount of error in the speech recognition system.

As per claim 16, Bridle et al. as modified by Nakadai et al. disclose all the limitations of a speech recognition system according to claim 14. Bridle et al. further disclose a speech recognition system wherein the spectral distance calculation includes calculating to the following expression for spectral distance D_n:

$$D_n = \sum A_i|R_n(f_i)-S_n(f_i)|,$$

where $R_n(fi)$ is the reference spectrum, $S_n(f_i)$ is the input signal spectrum, and A_i is equal to zero if a frequency f_i of the input signal is due to any known noise and A_i is unity if no noise is present at the frequency f_i (Page 3, Ln 10-11: The complete spectral distance is the sum of the spectral distance calculations for the number of samples discerning the reference spectra from each other.)

7. Claims 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bridle et al. (GB 2137791 A) and Nakadai et al. (US Patent No. 5,732,394) as applied to claim 14 above, and further in view of Nordwall (PCT/SE98/01292), and Martensson (US Patent No. 5,703,931).

As per claim 17, Bridle et al. as modified by Nakadai et al. disclose the speech recognition system of claim 14. However, Bridle et al. fail to disclose a mobile telephone including a speech recognition system.

A mobile telephone including a speech recognition system is well known in the art as evidenced by Nordwall. Nordwall discloses a mobile telephone (Figure 1) including speech recognition means (Page 9, Ln. 28-30).

Bridle et al. further fail to teach a mobile telephone comprising call answering circuitry operatively connected to a speech recognition system and responsive to one or more speech answering commands and each forming an input spectrum.

A mobile telephone comprising call answering circuitry operatively connected to a speech recognition system and responsive to one or more speech answering commands and each forming an input spectrum is well known in the art as evidenced by Martensson et al. Martensson et al. disclose a portable telephone that the user can answer by talking or shouting to it (Abstract; Col. 5, Ln. 2).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the speech recognition system of claim 14 to include a mobile phone comprising call answering circuitry operatively connected to said speech recognition system and responsive to one or more speech answering commands each forming an input spectrum because one of ordinary skill in the art would readily know that the mobile phone as taught by Nordwall and Martensson et al. would facilitate the operability of a mobile phone by the user, for example, by allowing the user to quickly answer a mobile phone without physically picking up the phone, as taught by Martensson et al. (Abstract).

As per claim 18, Bridle et al. as modified by Nakadai et al. and further modified by Nordwall and Martensson above disclose all the limitations of the mobile telephone according to claim 17. However, Bridle et al. fail to disclose a mobile telephone according to claim 17 wherein the call answering circuitry is responsive to an accept call command for accepting a call.

Call answering circuitry responsive to an accept call command for accepting a call is well known in the art as taught by Martensson. Martensson teaches a user answering an incoming call very quickly before the system times-out the call by talking or shouting to it even when the telephone is in a relatively inaccessible location (Abstract). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mobile telephone of Bridle et al. wherein call answering circuitry is responsive to an accept call command for accepting a call because one of ordinary skill in the art would readily know that the call answering circuitry of Martensson would facilitate the operability of a mobile phone by the user, for example, by allowing the user to quickly answer a mobile phone without physically picking up the phone.

As per claim 19, Bridle et al. as modified by Nakadai et al. and further modified by Nordwall and Martensson above disclose all the limitations of the mobile telephone according to claim 17. However. Bridle et al. fail to disclose a mobile telephone according to claim 17, wherein the call answering circuitry is responsive to a reject call command for rejecting a call. A mobile telephone wherein the call answering circuitry is responsive to a reject call command for rejecting a call is well known in the art as evidenced by Martensson and Nordwall.

Martensson teaches a user answering an incoming call very quickly before the system times-out the call by talking or shouting to it even when the telephone is in a relatively inaccessible location (Abstract). It easily follows that a user can talk at the phone to signal rejecting the call instead of accepting the call. As long as the voice recognition system is in place, any number of commands can be used to operative different functionalities of the mobile phone.

Nordwall further discloses command words that are used to achieve recognition within voice recognition algorithms (Page 10, Ln. 3-4). One of the command words may be "reject," for example.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mobile telephone of Bridle et al. wherein the call answering circuitry is responsive to a reject call command for rejecting a call because one of ordinary skill in the art at the time of the invention would readily know that the call answering circuitry of Martensson and Nordwall would facilitate the operability of a mobile phone by the user, for example, by allowing the user to quickly disconnect a mobile phone call without physically picking up the phone and pushing a button on the phone to end the call.

As per claim 20, Bridle et al. as modified by Nakadai et al. and further modified by Nordwall and Martensson above disclose all the limitations of the mobile telephone according to claim 17. Bridle et al. fail to disclose a mobile telephone according to claim 17, wherein the call answering circuitry is responsive to a forward call command for forwarding a call. A mobile

telephone wherein the call answering circuitry is responsive to a forward call command for forwarding a call is well known in the art as evidenced by Martensson.

Martensson teaches a user answering an incoming call very quickly before the system times-out the call by talking or shouting to it even when the telephone is in a relatively inaccessible location (Abstract). It easily follows that a user can talk at the phone to signal forwarding the call instead of accepting the call. As long as the voice recognition system is in place, any number of commands can be used to operative different functionalities of the mobile phone.

Nordwall further disclose command words that are used to achieve recognition within voice recognition algorithms (Page 10, lines 3-4). One of the command words may be, "forward," for example.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the mobile telephone of Bridle et al. wherein the call answering circuitry is responsive to a forward call command for forwarding a call because one of ordinary skill in the art at the time of the invention would readily recognize that the call answering circuitry of Martensson and Nordwall would facilitate the operability of a mobile phone by the user, for example, by allowing the user to quickly call forward a mobile phone call without physically picking up the phone and pushing a series of buttons on the phone to forward the call.

As per claim 21, Bridle et al. as modified by Nakadai et al. and further modified by Nordwall and Martensson above disclose all the limitations of a mobile telephone according to

claim 17. Bridle et al. further disclose the mobile telephone wherein the spectral distance calculation includes calculating to the following expression for spectral distance D_n:

$$D_n = \sum A_i |R_n(f_i)-S_n(f_i)|,$$

where $R_n(f_i)$ is the reference spectrum, $S_n(f_i)$ is the input signal spectrum, and A_i is equal to zero if a frequency f_i of the input signal is due to any known noise and A_i is unity if no noise is present at the frequency f_i (Page 3, Ln 10-11: The complete spectral distance is the sum of the spectral distance calculations for the number of samples discerning the reference spectra from each other.)

Response to Arguments

8. Applicant's argument filed with respect to claim 10 has been fully considered but is not persuasive.

Regarding claim 10, Applicant states, "In contrast to the spectral distance calculator in claim 10, Bridle does not pre-store 'one or more noise spectrum of one or more known noise signals including the first noise signal.' Nor does Bridle perform 'a spectral distance calculation comparing an input spectrum of an input signal in the presence of a first known noise signal and a reference spectrum.' Bridle's noise spectrum is not known, instead, it must be estimated. Not only does such an estimate require more sophisticated and complex software/circuitry, a noise estimate by definition is less accurate and reliable than a known noise signal. By employing

known noise signal, the spectral distance calculator is simpler (and therefore cheaper) to implement and more reliable in masking noise signals."

However, Bridle et al. disclose a template noise spectrum estimate (Page 1, Ln. 51, FIG. 3). Since the noise spectrum is a template, it is a pre-stored known noise signal. Moreover, an estimate of a noise signal can come very close to the actual noise signal, so that there is no need for more sophisticated and complex software/circuitry, and can be just as reliable compared to a noise signal. Furthermore, Bridle et al. perform a spectral distance calculation comparing an input spectrum of an input signal in the presence of a first known noise signal and a reference spectrum (Page 1, Ln. 1-12).

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kinari Patel whose telephone number is 703-305-8487. The examiner can normally be reached on 9 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 703-305-9645. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

kp
September 4, 2003

Richemond Dorvil
Primary Examiner